# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| In re application of: Chen | ) | Art Unit: 2879 |
| | ) | Examiner: B. Won |
| Serial No.: 10/711,634 | ) | |
| Filed: 9/29/2004 | ) | |
| For: Single-Component Yellow-Emitting Electroluminescent Phosphor | ) | |
| | ) | |

September 27, 2006

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

## APPEAL BRIEF UNDER 37 C.F.R. 41.37

Applicant hereby presents to the Board of Appeals their Brief in support of their Appeal from the decision of the Primary Examiner finally rejecting claims 1, 3, 4, and 8-12 in the above-identified application.

Please charge the required fee of $500.00 and any other fees necessitated by the filing of this Appeal Brief to Deposit Account No. 15-0685.

## REAL PARTY IN INTEREST

OSRAM SYLVANIA Inc., 100 Endicott Street, Danvers, Massachusetts is the Real Party in Interest as the owner of the entire interest in the above-identified application.

## RELATED APPEALS AND INTERFERENCES

As of the filing of this Brief, there are no related appeals or interferences known to the appellant, the appellant's legal representative or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## STATUS OF THE CLAIMS

Claims 1, 3, 4, and 8-12 stand rejected and are appealed. Claims 2 and 5-7 are canceled. They are delineated in the Appendix attached hereto.

## STATUS OF AMENDMENTS

All amendments have been entered.

## SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 1 is a single-component, yellow-emitting electroluminescent phosphor having an emission having an x color coordinate from 0.420 to 0.500 and y color coordinate from 0.420 to 0.440 when stimulated by an electric field. *Specification*, para. 7 (as amended 2/10/2006). Independent Claim 8 is an electroluminescent lamp that includes the single-component, yellow-emitting electroluminescent phosphor. *Specification*, para. 9 (as amended 2/10/2006).

## GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1, 3, and 8-12 are anticipated under 35 USC 102(b) by Izumi et al. (U.S. 5,307,186).

Whether claim 4 is patentable under 35 USC 103(a) over Izumi et al. in view of Menkara et al. (US 2005/0023546).

## ARGUMENT

### 35 U.S.C. §102

Claims 1, 3, and 8-12 stand rejected under 35 USC 102 as being anticipated by Izumi et al. (US 5,307,186). The Examiner asserts that the claimed x,y color coordinates are an inherent property of the electroluminescent (EL) phosphor disclosed by Izumi et al. *Final Office Action* (4/14/2006) at page 2. The Applicant respectfully disagrees. Neither the general composition of the EL phosphor of Izumi et al. nor the general term "yellow" is specific enough to anticipate the

range of y color coordinates claimed by the Applicant. For example, U.S. Patent 5,009,808 to Reilly et al. which is of record in this application teaches yellow-emitting ZnS:Mn,Cu,Cl phosphors. (Col. 1, lines 1-19) Of the specific phosphors listed in Table II of Reilly et al., all nine test samples have y color coordinates above the Applicant's claimed upper limit of 0.440. The lowest y color coordinate taught by Reilly is 0.457.

In order to support a rejection based on inherency, it must be established that the missing characteristic is necessarily present in the prior art.

> The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). MPEP §2112

By demonstrating that the yellow-emitting ZnS:Mn,Cu,Cl phosphor of Reilly et al. does not possess a y color coordinate within the range claimed by the Applicant, the Applicant respectfully asserts that the Applicant has shown that the missing y color coordinate is not necessarily present in Izumi et al. and therefore cannot be deemed to be inherent. Thus, the Applicant respectfully asserts that the claimed invention is not anticipated by Izumi et al.

The Applicant made this argument to the Examiner in a Response under 37 C.F.R. 1.116 (7/13/2006). The Examiner rejected this argument in an Advisory Action mailed 7/31/2006. The Examiner stated on page 2 of the Advisory Action that "[i]t is well known in the art

modifying the amount of activators (Cu, Cl, Mn) shifts chromaticity values (x-y coordinates) to emit different colors with different wavelength." The Examiner then concludes that this "giv[es] one of ordinary skill in the art a reasonable expectation of success that modifying the amount of phosphor activators of Izumi will result in the claimed properties recited in claims 1, 3, and 8-12."

The Applicant respectfully asserts that this is clearly an improper basis for a rejection under 35 USC 102 and wholly inappropriate for a rejection based on inherency. The Applicant has referenced above the proper standard to be applied to a rejection based on an inherent feature. Other than the singular mention in Izumi et al. of a yellow ZnS:Cu, Mn, Cl phosphor, there is no guidance, teaching, or suggestion on how to modify that phosphor to obtain the claimed x,y coordinates. Instead, the Examiner looks to combine the teachings of other references in an attempt to support the rejection based on inherency. This is improper under 35 USC 102 and the Applicant respectfully asserts that it certainly does not meet the requirement that "the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *In re Robertson,* 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

Moreover, this reasoning would also fail the test for *prima facie* obviousness under 35 USC 103. Without an identified teaching, suggestion or motivation to make the modification, the Examiner's reasoning amounts to nothing more than an invitation to experiment which is not a proper basis even for obviousness. With regard to the additional references cited in the Advisory Action, the Applicant respectfully asserts that they are equally uninstructive. In particular, the Examiner points to Fan 2003/0230741 paragraph 8 for the teaching "that combining phosphors with different blend will change colors." *Advisory Action* at page 2. However, the Applicant's invention is a single-component phosphor and not a blend of phosphors. So this teaching is not relevant to the claimed invention. With regard to Lee (U.S. 7,067,073), the Applicant addressed the published application version of this patent (2003/0197460) in the Amendment filed 2/10/2006 in response to a previous rejection. As the Applicant successfully argued, Lee discloses a phosphor having an x value (0.55) that is outside of the Applicant's claimed range for the x color coordinate (0.420 to 0.500). There is no motivation in Lee to produce an

electroluminescent phosphor having a lower y value. In particular, Lee indicates that higher y values are desired as compared to the conventional phosphor. (Paragraphs 8 and 37) Consequently, one skilled in the art would not be motivated to make a phosphor having an (x,y) value within the same range of (x,y) values claimed by the Applicant. Moreover, there is nothing in Lee which indicates that the phosphors described therein are electroluminescent (excitation by electric field). Lee describes only cathodoluminescence (excitation by electron bombardment, Paragraphs 7 and 34) and photoluminescence (excitation by light, Table 1). Thus, the Applicant respectfully asserts that Lee would also not provide a basis or motivation for modifying the phosphor of Izumi et al.

35 USC §103

Claim 4 stands rejected under 35 USC 103(a) as being unpatentable over Izumi et al. in view of Menkara et al. (US 2005/0023546). The Applicant's above arguments with respect to Izumi et al. are reasserted here. In view of the fact that neither reference teaches nor suggests the claimed y color coordinate range, the Applicant respectfully asserts that the claimed invention is not obvious in view of Izumi et al. and Menkara et al.

Respectfully submitted,

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## CLAIMS APPENDIX

1. (previously presented) A single-component, yellow-emitting electroluminescent phosphor having an emission having an x color coordinate from 0.420 to 0.500 and y color coordinate from 0.420 to 0.440 when stimulated by an electric field.

Claim 2 (canceled).

3. (original) The phosphor of claim 1 wherein the phosphor has a composition represented by ZnS:Cu,Cl,Mn.

4. (original) The phosphor of claim 3 wherein the phosphor additionally contains a metal selected from gold and antimony.

Claims 5-7 (canceled).

8. (previously presented) An electroluminescent lamp including a single-component, yellow-emitting electroluminescent phosphor, the lamp having an emission having x color coordinate from 0.420 to 0.500 and y color coordinate from 0.420 to 0.440 when operated.

9. (previously presented) The lamp of claim 8 wherein the lamp has an initial brightness of at least 6 foot-Lamberts (ft-L) when operated in a 50% relative humidity (R.H.) and 70°F environment.

10. (previously presented) The lamp of claim 8 wherein the lamp has an initial brightness of at least 8 ft-L when operated at 100V and 400 Hz in a 50% relative humidity (R.H.) and 70°F environment.

11. (previously presented) The lamp of claim 9 wherein the lamp exhibits a half-life of at least 1000 hours.

12. (previously presented) The lamp of claim 9 wherein the lamp exhibits a half-life at least 1500 hours.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.